

WHAT IS CLAIMED AS NEW AND DESIRED TO BE PROTECTED BY
LETTERS PATENT OF THE UNITED STATES OF AMERICA, IS:

1. A postal mail handling and sorting system, comprising:
input feed means for feeding a random mixed input
of mail pieces having randomly arranged street addresses
printed thereon;

5 a plurality of receiving compartments, respective-
ly representing a plurality of delivery addresses arranged
in a predetermined sequence which corresponds to sequenced
delivery addresses upon a particular route to which mail is
to be delivered in accordance with a delivery address se-
10 quence, for receiving said mail pieces in said delivery ad-
dress sequence; and

means for sorting said random mixed input of mail
pieces such that said sorted mail pieces can be placed into
said plurality of receiving compartments as a result of a
15 single pass of said random mixed input of mail pieces
through said system from said input feed means to said plu-
rality of receiving compartments whereby mail pieces origi-
nally comprising said random mixed input of said mail pieces
having said randomly arranged street addresses printed
20 thereon are now disposed within said plurality of receiving
compartments so as to be arranged in said delivery address
sequence.

25

2. The system as set forth in Claim 1, wherein:

said random mixed input of said mail pieces com-

prises a random mixed input of letter and flat mail pieces.

5

3. The system as set forth in Claim 2, further comprising:
reader means for reading printed address information from said random mixed input letter and flat mail pieces;

10 conveyor means for conveying said random mixed input letter and flat mail pieces from said reader means toward said plurality of receiving compartments; and

computer control means, into which is input said printed address information read by said reader means from
15 said random mixed input letter and flat mail pieces, and within which said sequenced delivery addresses as represented by said plurality of receiving compartments are also present, for controlling said sorting means in order to properly route said random mixed input letter and flat mail
20 pieces toward said plurality of receiving compartments such that said letter and flat mail pieces are now properly arranged within said plurality of receiving compartments in accordance with said delivery address sequence.

25

4. The system as set forth in Claim 3, further comprising:
a plurality of loading and transfer compartments, respectively operatively associated with said plurality of
30 receiving compartments, for receiving said random mixed input letter and flat mail pieces from said conveyor means and

for transferring said random mixed input letter and flat mail pieces to predetermined ones of said receiving compartments so as to properly arrange said letter and flat mail pieces within said plurality of receiving compartments in accordance with said delivery address sequence.

5. The system as set forth in Claim 3, wherein:

said sorting means comprises diverter gates provided within said conveyor means and activated by said computer control means for diverting predetermined ones of said random mixed input letter and flat mail pieces toward predetermined ones of said plurality of receiving compartments.

6. The system as set forth in Claim 4, wherein:

said sorting means comprises diverter gates provided within said conveyor means and activated by said computer control means for diverting predetermined ones of said random mixed input letter and flat mail pieces toward predetermined ones of said plurality of loading and transferring compartments.

7. The system as set forth in Claim 4, wherein:

said plurality of loading and transferring compartments are disposed within a first vertical array; and

said plurality of receiving compartments are disposed in a second vertical array disposed adjacent to said first vertical array of said plurality of loading and transferring compartments.

5

8. The system as set forth in Claim 7, wherein:

said first vertical array of said loading and transferring compartments are mounted upon a first vertically oriented flexible drive chain conveyor; and

said second vertical array of said receiving compartments are mounted upon a second vertically oriented flexible drive chain conveyor.

15

9. The system as set forth in Claim 8, wherein:

said computer control means is operatively connected to said first vertically oriented flexible drive chain conveyor so as to incrementally move said plurality of loading and transferring compartments relative to said plurality of receiving compartments disposed upon said second vertically oriented flexible drive chain conveyor so as to properly place said sorted mail pieces into predetermined ones of said plurality of receiving compartments in accordance with said delivery address sequence.

30

10. The system as set forth in Claim 7, wherein:

said first vertical array of said loading and transferring compartments are mounted upon a first vertically oriented flexible drive chain conveyor; and

5 said second vertical array of said receiving compartments are mounted upon a second vertically oriented fixed shelving system.

10 11. The system as set forth in Claim 9, further comprising:

 a collection container disposed beneath said second vertical array of said receiving compartments mounted upon said second vertically oriented flexible drive chain conveyor; and

15 said computer control means is operatively connected to said second vertically oriented flexible drive chain conveyor so as to incrementally move said plurality of receiving compartments upon completion of a sorting operation with respect to a predetermined batch of mail pieces so
20 as to permit said sorted mail pieces to be discharged from said plurality of receiving compartments into said collection container so as to collect said sorted mail pieces within said collection container in accordance with said delivery address sequence.

25

12. The system as set forth in Claim 7, wherein:

30 said first vertical array of said loading and transferring compartments are mounted upon a plurality of first vertically oriented flexible drive chain conveyors

arranged within a horizontal array; and

said second vertical array of said receiving compartments are mounted upon a plurality of second vertically oriented flexible drive chain conveyors arranged within said horizontal array.

13. The system as set forth in Claim 12, further comprising:

a plurality of collection containers respectively disposed beneath each one of said second vertically oriented flexible drive chain conveyors upon which said second vertical arrays of said receiving compartments are mounted; and

said computer control means is operatively connected to each one of said second vertically oriented flexible drive chain conveyors so as to incrementally move said plurality of receiving compartments upon completion of a sorting operation with respect to a predetermined batch of mail pieces so as to permit said sorted mail pieces to be discharged from said plurality of receiving compartments into respective ones of said collection containers so as to collect said sorted mail pieces within each one of said collection containers in accordance with said delivery address sequence.

14. The system as set forth in Claim 7, wherein:

said plurality of receiving compartments disposed within said second vertical array comprises a pair of laterally adjacent receiving compartments disposed at each ele-

5 vational level of said second vertical array; and

6 said plurality of loading and transferring com-
partments disposed within said first vertical array each
comprises a single compartment at each elevational level of
5 said first vertical array which is movable between a central
loading position at which each one of said loading and
transferring compartments receives a piece of mail from said
conveyor means, and a pair of laterally spaced unloading po-
sitions at which each one of said loading and transferring
10 compartments can transfer a piece of mail to either one of
said pair of laterally adjacent receiving compartments of
said plurality of receiving compartments.

15

15. A letter and flat mail handling and sorting system, com-
prising:

input feed means for feeding a random mixed input
of letter and flat mail pieces having randomly arranged
20 street addresses printed thereon;

reader means for reading printed address informa-
tion from said fed random mixed input of letter and flat
mail pieces;

a plurality of receiving compartments, respective-
25 ly representing a plurality of delivery addresses arranged
in a predetermined sequence which corresponds to sequenced
delivery addresses upon a particular route to which letter
and flat mail is to be delivered in accordance with a deliv-
ery address sequence, for receiving said letter and flat
30 mail pieces in said delivery address sequence;

conveyor means for conveying said random mixed in-

put of letter and flat mail pieces from said reader means toward said plurality of receiving compartments;

5 a plurality of loading and transfer compartments, respectively operatively associated with said plurality of receiving compartments, for receiving said random mixed input letter and flat mail pieces from said conveyor means and for transferring said random mixed input letter and flat mail pieces to predetermined ones of said receiving compartments so as to properly arrange said letter and flat mail
10 pieces within said plurality of receiving compartments in accordance with said delivery address sequence;

means operatively connected to said conveyor means for sorting said random mixed input of letter and flat mail pieces such that said sorted letter and flat mail pieces can
15 be directed into said plurality of loading and transfer compartments, and in turn into said plurality of receiving compartments, as a result of a single pass of said random mixed input of letter and flat mail pieces through said system from said input feed means to said plurality of receiving
20 compartments whereby letter and flat mail pieces originally comprising said random mixed input of said letter and flat mail pieces having said randomly arranged street addresses printed thereon are now disposed within said plurality of receiving compartments so as to be arranged in said delivery
25 address sequence; and

computer control means, into which is input said printed address information read by said reader means from said random mixed input letter and flat mail pieces, and within which said sequenced delivery addresses as represented by said plurality of receiving compartments are also
30 present, for controlling said sorting means and said plural-

ity of loading and transfer compartments in order to properly route said random mixed input letter and flat mail pieces toward said plurality of receiving compartments such that said letter and flat mail pieces are now properly arranged within said plurality of receiving compartments in accordance with said delivery address sequence.

- 10 16. The system as set forth in Claim 15, wherein:
said plurality of loading and transferring compartments are disposed within a first vertical array; and
said plurality of receiving compartments are disposed within a second vertical array disposed adjacent to
15 said first vertical array of said plurality of loading and transferring compartments.
- 20 17. The system as set forth in Claim 16, wherein:
said first vertical array of said loading and transferring compartments are mounted upon a first vertically oriented flexible drive chain conveyor; and
said second vertical array of said receiving compartments are mounted upon a second vertically oriented
25 flexible drive chain conveyor.
- 30 18. The system as set forth in Claim 17, wherein:
said computer control means is operatively connect-

ed to said first vertically oriented flexible drive chain conveyor so as to incrementally move said plurality of loading and transferring compartments relative to said plurality of receiving compartments disposed upon said second vertically oriented flexible drive chain conveyor so as to properly place said sorted letter and flat mail pieces into predetermined ones of said plurality of receiving compartments in accordance with said delivery address sequence.

10

19. The system as set forth in Claim 16, wherein:

said first vertical array of said loading and transferring compartments are mounted upon a first vertically oriented flexible drive chain conveyor; and

said second vertical array of said receiving compartments are mounted upon a second vertically oriented fixed shelving system.

20

20. The system as set forth in Claim 18, further comprising:

a collection container disposed beneath said second vertical array of said receiving compartments mounted upon said second vertically oriented flexible drive chain conveyor; and

said computer control means is operatively connected to said second vertically oriented flexible drive chain conveyor so as to incrementally move said plurality of receiving compartments upon completion of a sorting operation with respect to a predetermined batch of letter and

flat mail pieces so as to permit said sorted letter and flat mail pieces to be discharged from said plurality of receiving compartments into said collection container so as to collect said sorted letter and flat mail pieces within said collection container in accordance with said delivery address sequence.

10 21. The system as set forth in Claim 16, wherein:

said first vertical array of said loading and transferring compartments are mounted upon a plurality of first vertically oriented flexible drive chain conveyors arranged within a horizontal array; and

15 said second vertical array of said receiving compartments are mounted upon a plurality of second vertically oriented flexible drive chain conveyors arranged within said horizontal array.

20

22. The system as set forth in Claim 21, further comprising:

a plurality of collection containers respectively disposed beneath each one of said second vertically oriented flexible drive chain conveyors upon which said second vertical arrays of said receiving compartments are mounted; and

25 said computer control means is operatively connected to each one of said second vertically oriented flexible drive chain conveyors so as to incrementally move said plurality of receiving compartments upon completion of a sorting operation with respect to a predetermined batch of

30

letter and flat mail pieces so as to permit said sorted letter and flat mail pieces to be discharged from said plurality of receiving compartments into respective ones of said collection containers so as to collect said sorted letter and flat mail pieces within each one of said collection containers in accordance with said delivery address sequence.

10

23. The system as set forth in Claim 16, wherein:

said plurality of receiving compartments disposed within said second vertical array comprises a pair of laterally adjacent receiving compartments disposed at each elevational level of said second vertical array; and

said plurality of loading and transferring compartments disposed within said first vertical array each comprises a single compartment at each elevational level of said first vertical array which is movable between a central loading position at which each one of said loading and transferring compartments receives a piece of mail from said conveyor means, and a pair of laterally spaced unloading positions at which each one of said loading and transferring compartments can transfer a piece of mail to either one of said pair of laterally adjacent receiving compartments of said plurality of receiving compartments.

30